

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/33900

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : E21B 43/04, 43/08

US CL : 166/51, 278, 227

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 166/51, 278, 227, 233, 235, 236

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002/0096333 A1 (JOHNSON et al) 25 July 2002 (25.07.2002), figures 2-5 and Paragraph [0027].	1-38
A	US 2,158,569 A (BOWEN) 16 May 1939 (16.05.1939), Figure 1.	1-38
X	US 3,450,207 A (HIRSCH) 17 June 1969 (17.06.1969), figure 3 and column 4, line 62 through column 5, line 7.	1-3,6-10,13-17,20-24,27-34,37,38
Y		5,12,19,26,36
A	US 5,165,476 A (JONES) 24 November 1992 (24.11.1992), figure 2.	1-38
Y	US 5,113,935 A (JONES et al) 19 May 1992 (19.05.1992), column 2, lines 19-33.	5,12,19,26,36
A	US 2,312,862 A (BERMINGHAM, JR.) 02 March 1943 (02.03.1943), figures 1-2.	1-38

☐ Further documents are listed in the continuation of Box C.

☐ Sec patent family annex.

### \* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

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"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search

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